

#### ABSTRACT OF THE DISCLOSURE

The present invention relates to (1) carbon powder having a primary particle size of 100 nm or less and an X-ray crystallite plane spacing  $C_0$  of less than 0.680 nm, preferably of 0.6730 nm or less, which shows a volume resistivity of 0.1  $\Omega \cdot \text{cm}$  or less in the pressurized state under a pressure of 2 MPa, and containing boron in a range of 0.1 to 5 % by mass, (2) a method for producing the carbon powder, (3) an electrically conducting carbon composite powder wherein above-described carbon powder is mixed with fibrous carbon, particularly vapor grown carbon fiber, (4) a catalyst for solid polymer electrode fuel battery using above-described carbon powder or electrically conducting carbon composite powder, (5) a polymer electrolyte fuel battery cell using the catalyst, and (6) a polymer electrolyte fuel battery using the catalyst.

By using the carbon powder containing boron or an electrically conducting carbon composite powder, a high-performance polymer electrolyte fuel battery wherein power generation efficiency and durability are improved, can be obtained.